cholera, and cholera are substantially the same as the curve for diarrhœa, all showing the same close obedience to temperature. It is a noteworthy circumstance that these four curves group themselves into pairs—diarrhœa and British cholera on the one side, and dysentery and Asiatic cholera on the other. The chief points of difference are that dysentery and Asiatic cholera begin markedly to rise considerably later than the other two allied diseases, attain their maximum a month later, and fall more rapidly than they rose, the annual phases being nearly a month later than those of diarrhœa and British cholera.

The peculiarly malignant character of summer diarrhœa among young children under five years of age may be shown by the weekly mortality from diarrhœa, rising from 20 in the middle of June, to 342 in the first week of August, 1880, when the mean temperature of July and August was about the average. In July, 1876, when the temperature was 3°·6 above the average, the weekly mortality from diarrhœa among children rose to 502 on the last week of that month. On the other hand, during the cold summer of 1860, the diarrhœa mortality for all ages did not in any week exceed ninety.

Of the British large towns the lowest mortality from summer diarrhœa is that of Aberdeen, which has the lowest summer temperature. The diarrhœa mortality of each town is found from year to year to rise proportionally with the increase of temperature, but the rate of increase differs greatly in different towns, thus pointing to other causes than mere weather, or the relative temperatures and humidities of these towns, as determining the mortality. Fig. 11 shows the weekly death-rate from diarrhœa for six of the large British towns, viz., Leicester, curve 1; Liverpool, 2; London, 3; Bristol, 4; Portsmouth, 5; and Edinburgh, 6; from which it is seen that though the summer temperature of London is hotter than that of Liverpool and Leicester, its diarrhœa mortality is very much less. In this respect London contrasts very favourably with the great majority of British large towns, showing its sanitary conditions generally are at least fairly satisfactory; but inasmuch as it is somewhat in excess of a few of the towns whose summer temperature is scarcely lower, London offers problems in this field to the sanitary reformer for his solution.

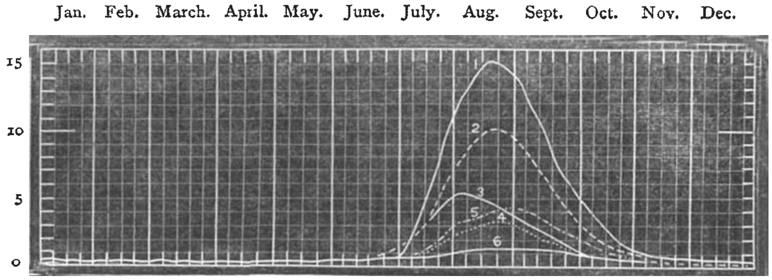

FIG. 11.—Weekly Deaths from Diarrhœa calculated on the Annual Mortality per 1000 of the population.

Figs. 6 to 10 give the curves for thrush, tabes mesenterica, enteritis, jaundice, and atrophy and debility, all of which have their maximum fatality during the hottest period of the year, and all of which, it will be noted, are bowel complaints. Indeed with the apparent exception of one or two nervous diseases, all those diseases which indicate an increase in their death-rate during the summer months are bowel complaints. ALEXANDER BUCHAN

(*To be continued.*)

NOTES

THE British Association having decided to hold its annual meeting this year at York, where, fifty years ago, its first meeting was held, it has been thought that advantage should be taken of this jubilee meeting to show, as far as possible, the progress which has been made during the past half century in the construction of instruments of scientific research, and, with this view, it has been decided to invite men of science, scientific societies, and manufacturers to exhibit, at the meeting, instruments of the latest patterns, and tools used in their construction; and if the science be fifty years old, the instruments used in 1831; otherwise specimens of the earliest patterns that can be found. The Exhibition will be for the week of the meeting only, viz. from August 31 to September 8. To ensure that specimens intrusted for exhibition shall be as advantageously placed as possible, a special sub-committee, called "The Museum Sub-Committee," has been formed at York, who will be happy to afford every possible information. The sub-committee includes several gentlemen who have had considerable experience in the arrangement of exhibitions, and they will give their personal attention to the unpacking, arrangement, and care of objects intrusted to them, so that the risk of injury will be reduced to a minimum. The articles exhibited will be insured against fire, and provision will be made for police protection; beyond this the committee does not hold itself responsible. It is requested that exhibitors will put a value on their exhibits, in order that the necessary insurance may be made. The proposed Exhibition will also include apparatus and specimens illustrative of papers to be read at the Association meeting, which the authors may be willing to allow to be examined at leisure, as well as instruments constructed for the prosecution of special researches which have not yet become articles of ordinary commerce. It is very desirable that such instruments and apparatus should be exhibited in action, if arrangements can be made for the purpose.

THE thirtieth meeting of the American Association for the Advancement of Science will be held at Cincinnati, Ohio, commencing on Wednesday, August 17, and following days. As it is generally believed that the Cincinnati meeting will be the largest and most important scientific meeting ever held in the West, every effort will be made by the Local Committee to prepare, in advance of the meeting, a satisfactory general programme for the week. At the Boston meeting several changes in the constitution were proposed, which will come up for action at Cincinnati, the object of the changes being the reorganisation of the sections, and also to extend the scope of the Association. Should these changes be adopted, the Association will embrace eight sections of equal standing, each presided over by a vice-president, and having its own secretary and sectional committee. The following is the division proposed, and upon which final action will be taken at Cincinnati:—Sec. A. Physics; Sec. B. Astronomy and Pure Mathematics; Sec. C. Chemistry, including its applications to Agriculture and the Arts; Sec. D. Mechanical Science; Sec. E. Geology and Geography; Sec. F. Biology; Sec. G. Anthropology; Sec. H. Economic Science and Statistics. Also I. A Permanent Subsection of Microscopy, which shall elect its own officers and be responsible directly to the Standing Committee. Several excursions will be arranged for by the Local Committee, and will be announced on their circular. Special excursions will be arranged for the Anthropological Section to Fort Ancient, Madisonville, and other places of interest. The Permanent Secretary of the Association is Prof. F. W. Putnam, Salem, Mass.

THE Paris Academy of Sciences elected, on June 13, M. Fouque, Professor of Mineralogy to the College de France, a Member of the Section of Mineralogy, to fill the seat vacated by the death of M. Delesse.

AT the first General Meeting of the Members and the Honorary Council of the Sanitary Assurance Association on Friday last, Prof. Corfield (Chief Sanitary Officer) and Mr. Judge (Surveyor) related to the meeting the progress of the Association, and reported on the work of sanitary inspection that had been done. The property which had been placed on the Assurance Register varied in value from houses rated at 60*l.* a year, in which the total fee to subscribers for report, supervision of work, and certificate, is two guineas, to houses rated as high as 700*l.* a year, with proportionately increased fees. The Association undertakes the inspection of the smallest class of property, and no fee is charged to subscribers for a single house rated at 20*l.*, while the fee is only half a guinea for houses rated at 40*l.* In the discussion which followed, Sir Richard Temple, Capt. Douglas Galton, and Mr. Whichcord spoke strongly in support of the objects of the Association, and the Council were requested to take steps to make the Association as widely known as possible, and particularly to call the attention of the proprietors of large building estates to the advantages which would accrue if the certificate of the Association was made essential to the granting of leases.

THE prize programme of the Belgian Academy of Sciences for 1882 consists of the following subjects (briefly stated):—Distribution between acids and bases, in mixture of solutions of salts which, by their mutual reaction, do not produce insoluble substances; *exposé* of present knowledge of torsion and improvement of it; extension of knowledge of the relations between the physical and chemical properties of simple and compound bodies; description of Belgian Tertiary strata of the Eocene series; influence of the nervous system on regulation of temperature in warm-blooded animals; relations of the pollinic tube to the ovum in one or more Phanerogams. Medals of the value of 600 francs are offered in connection with each question, except the third, for which the medal is valued at 1000 francs. The time-limit is August 1. For 1883 the following three questions are adopted:—1. Establish by new experiments the theory of reactions presented by substances in the nascent state. 2. Prove the truth or falsity of Fermat's proposition: To decompose a cube into two other cubes, a fourth power, and generally any power, into two powers of the same name, above the second power, is impossible. 3. New spectroscopic researches are required, showing especially whether or not the sun contains the essential constituents of organic compounds. A gold medal of 800 francs value is offered for solution of any one of these. The time-limit is August 1, 1883. Memoirs must be written in French, Dutch, or Latin, and sent in with motto and sealed envelope to the secretary.

WE learn that M. Planté, the inventor of the electrical accumulator, intends to organise a factory for the sale of his instruments. M. Planté considers himself obliged to take this step in order to show that the principles of his original apparatus are sufficient to work them with advantage. It appears that the Faure accumulators with oxide of lead cannot be loaded except by a battery, and that the original lead can be worked by a magneto-electric machine, by taking some precautions which will be described shortly. M. Plante is constructing for M. Tissandier an accumulator on his original system, which will be used to direct a small elongated balloon. It is intended to exhibit it in the nave of the Palais de l'Industrie in August next.

OUR Paris Correspondent writes: On June 10 an interesting experiment took place in Paris. A little after midnight a tram-car belonging to the Omnibus Company conveyed forty persons from the Place du Trone to the Boulevard Richard Lenoir and back at a velocity of six miles an hour. The motive power was supplied by 160 Faure accumulators, weighing 18 lbs. each. An interesting feat was accomplished, but not quite such as was anticipated. The work could have been done by two horses. The experiment lasted about one hour, and the power of the motor, although not exhausted, was much diminished.

M. JOSÉ CUSTODIO, Marinha Grande, Leiria, Portugal, writes to say that the centenary of the death of the great Portuguese Minister, the Marquis of Pombal, is to be celebrated on May 8 of next year. In connection therewith it is desired to obtain information about Williams Stephens, who founded the first royal manufactory of glass in Portugal, under the patronage of Pombal. Any information whatever concerning Stephens will be welcomed.

WE would draw the attention of our readers to the announcement of the first general meeting of the Society of Chemical Industry on the 28th and 29th inst., at the Institution of Civil Engineers, with Prof. Roscoe in the chair.

THE Portfolio of Drawings of Living Animals and Plants issued by Mr. Thomas Bolton for June, 1881, is a very creditable production, and we are glad to call our readers' attention to the opportunity there is afforded to them by the labours of Mr. Bolton, of investigating fresh and living specimens of very many interesting forms of animal and vegetable life—for the most part of quite microscopical size—and at the same time of having, by the drawings which accompany these forms, an excellent sketch of what they are to expect to find, and a short but authentic history of what is known about them.

M. MASCART, the director of the French Meteorological Service, is devising a new registering magnetometer, which is intended to have all the indications recorded on one roll of paper.

AN earthquake shock was felt in Switzerland on Thursday morning last. The shock occurred at 12.35 a.m. The direction was south-west to north-east at Geneva, and north-east to to south-west at Lausanne, Martigny, and Bex. Prof. Morel of Morges describes it as having been for one region very intense; it was felt from Martigny and Bex, in the Valais, to the valley of Joux, in Vaud; at Geneva, Chamounix, and all round Lake Leman. Its centre was probably in the valley of the Upper Rhone, where seven or eight oscillations were distinctly perceived, accompanied in many places by subterranean thunder, bells were rung, walls cracked, slates dislodged, and chimneys overturned. It was also felt at Osmondo, notwithstanding the great height of the village above sea-level. A second shock was felt some hours later in the same locality.

INTELLIGENCE received at Constantinople on June 9 from Van states that an earthquake has devastated thirty-four villages in that district. Another shock of earthquake occurred at Chios at half-past nine on Saturday morning, causing the fall of a Turkish minaret and of several ruined houses in the town. Oscillations of the ground are constantly noticed in Croatia. Thus on May 19 at 2 a.m. a violent shock, lasting three seconds, and accompanied by subterranean noise, was observed at Glina.

The shock was felt at Agram also, and at several other Croatian towns. On May 23, at 8.21 p.m., an earthquake was observed at Metkovich (Dalmatia). It lasted eight seconds, its motion was wave-like, and in a south-westerly direction ; at 9.45 p.m. a second one followed. At Janina no less than seven different shocks were noticed on the same day ; they varied considerably in strength, the first one occurred at 10.15 a.m., the last one at 10.57 p.m. All were accompanied by subterranean noise. At Stagno two violent shocks occurred at 8.23 and 9.3 p.m., and at Slano a moderate one at 8.35 p.m. On May 22 at 6.15 p.m. an oscillation of the ground was observed at Zwickau (Saxony); the direction was from north-east to south-west. On May 21 a moderate shock was noted about 11 p.m. at Copenhagen and in the vicinity. It lasted six seconds.

MR. W. SOWERBY, writing from the Botanical Gardens to the *Times*, states that the fresh-water jelly-fish described in NATURE a year ago by Professors Allman and Ray Lankester, has reappeared in the Victoria Regia tank in the Gardens. It is a curious fact that the date of its first discovery (June 9, 1880) should be so near the day of its reappearance—viz. June 12 ; as during the winter the tank is cleaned out and remains for some months empty.

THE numbers of the present year's issue of our northern namesake, *Naturen*, under the recent editorship of the eminent Norwegian geologist, Hans F. Reusch, continue to provide well written popular expositions of scientific questions. Dr. Leonhard Stejneger returning to a subject which he had treated of in early numbers, considers the causes which influence the migration of birds, which he is disposed to seek principally in the necessity originally imposed on earlier generations to seek food by change of locality, when the cold in one region, and the heat in another, destroyed the smaller animals, or the plants, from which these birds sought their nourishment, while the sense once developed became in process of time an hereditary instinct. The editor describes the working of the telephone system in Christiania, where, since June, 1880, a central station, in which the work is done by women, has been established in connection with Dr. Bell's Company in New York, and under the direction of Herr Hugo Ullitz. The apparatus used is the so-called Blake's microphone. Herr Geelmuyden draws attention to the expediency of adopting one mean time, viz., that of Christiania, for all Norway. The difficulty of establishing one normal time for the whole country is especially great in Norway, where, for instance, some districts—as Vardö and Vadsö—lie further east than Constantinople, while the west coast has nearly the same W. long. as Marseilles. As one of the curious results that would follow the adoption of the time of Christiania as the normal standard he mentions that the midnight sun at the North Cape would have to be looked for at 11 P.M. A colossal pine which was lately uprooted by an inundation at Pÿhajoki in Oulais, Finland, was found to have 1029 annual rings. The Norwegian Arctic Expedition has yielded a new fish bearing affinity with the Ophidiidæ, but presenting sufficient differences to justify its recognition as a hitherto unknown northern form, for which Dr. R. Collett has suggested the name *Rhodichthys regina*. The entire yield of fish in the trawl-nets at great depths (from 1300 to 1400 fathoms) was 234 individuals, belonging to thirty-two different genera, of which seven had been previously unknown to science.

THE deaths are announced of Dr. Jakob Bernays, Principal Librarian at the Bonn University, and of Dr. Richard Ladislaus Heschl, Professor of Pathological Anatomy at the University of Vienna (the successor of Rokitanski). Both were fifty-seven years of age, and both died on May 26.

THE Highbury Microscopical and Scientific Society gave a *conversazione* at Harecourt Hall, Canonbury, on Thursday, the 9th inst., which was numerously attended.

THERE is a regular mania in Paris at present for publishing periodicals connected with electricity. A new electrical weekly paper called the *Telephone* has issued its first number ; it is the fifth in existence. We are told moreover that the first number of another, the *Electrophone*, will be issued in a very few days.

MR. HENRY WALKER has issued a useful little "Guide to the Popular Natural History Societies of London." In London and suburbs there are twenty such associations.

THE *conversazione* to commemorate the fiftieth anniversary of the Harveian Society of London will be held on Wednesday, June 29, at the South Kensington Museum.

EXPERIMENTS have been made during the past few days in lighting the House of Commons by means of the electric light.

SEVEN solar lamps were lighted by electricity about a week ago in Paris by a Siemens machine, situated in the *mairie* of rue Drouat. These lamps, which are perfectly regular, and placed in the most crowded part of the Paris Boulevards, near Passage Jauffroy, have created a sensation.

THE concerts of the Palais Royal will be resumed in a few days. The gardens will be lighted by no less than eighteen Jablockhoff lamps. It is intended to place a miniature electric boat on the basin manned by a little girl.

THE annual Congress in connection with the French Society of Archæology will be opened on June 28 at Vannes (Morbihan). A long and interesting programme has been prepared for the meeting.

THE additions to the Zoological Society's Gardens during the past week include a Chacma Baboon (*Cynocephalus porcarius*) from South Africa, presented by Miss Agnes Robertson; a Rhesus Monkey (*Macacus erythræus*) from India, presented by Mr. Hamilton Kerr ; a Malbrouck Monkey (*Cercopithecus cynosurus*) from West Africa, presented by Mr. H. Aylesbury, steam yacht *Albion ;* a Common Ocelot (*Felis pardalis*) from America, presented by Mr. P. Leckie; two Common Peafowls (*Pavo cristatus*) from India, presented by Mr. George Stevenson ; a Lesser Sulphur-crested Cockatoo (*Cacatua sulphurea*) from the Moluccas, presented by Miss Rose Hubbard ; three Waxwings (*Ampelis garrulus*), European, purchased ; a Cape Buffalo (*Bubalus caffer*), a Japanese Deer (*Cervus sika*), born in the Gardens ; nine Summer Ducks (*Aix sponsa*), a Jameson's Gull (*Larus jamesoni*), bred in the Gardens.

GEOGRAPHICAL NOTES

AT its last meeting the Russian Geographical Society announced the nomination of M. Yurgens as Director of the Polar Meteorological Station on the Lena, and of M. Eichner and Dr. Bunge as his assistants. The Society also voted sums of money for sending M. Kouznetsoff for the anthropological exploration of Tartarian tribes and for M. Malakhoff, who goes to the provinces of Vyatra and Oufa for the exploration of caverns and of remains of former settlements.

WE find in the *Izvestia* of the Russian Geographical Society the following information as to the geodetical work which was done by the Russian officers on the Balkan peninsula during the last war. The whole of Bulgaria and Eastern Roumelia was covered with a net of trigonometrical triangles, as well as the portion of Turkey between Adrianople, Dede-agatch, and Rodosto, and from Yambol, through Adrianople, to Constantinople and Bourgas. The net goes also into Servia and along the Danube, the total number of geodetically-determined spots being 1289 ; for all these spots there were also made determinations of heights. The highest determined summits on the Balkan mountains are Youmroutchkal (7791 feet), and Vajan (6217 feet); and in the Rhodope Mountains: Karlyk (9846 feet), Karlyk-moolah and Sutka (both 7189 feet high). The longitudes of eleven principal towns (Rouschouk, Sistova, Tirnova, &c.) were determined with great accuracy, and those of fifty-seven others either by telegraph or by chronometers, and